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10/530,751	04/08/2005	Jun Hagihara	Q87381	7326
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WASHINGTON, DC 20037-3213			PAPER NUMBER	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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# Office Action Summary

**Application No.**

10/530,751

**Applicant(s)**

HAGIHARA ET AL.

**Examiner**

SPENCER PATTON

**Art Unit**

3664

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 April 2005.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-6 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 03 November 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO/GS-08)  
Paper No(s)/Mail Date 4/8/2005; 1/10/2006  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. Receipt is acknowledged of the replacement drawings filed 11/3/2005, and the IDS filed 4/8/2005 and 1/10/2006, which have been entered in the file.

#### ***Specification***

2. The disclosure is objected to because of the following informalities:

Page 13, line 17, "valuables" should be changed to --variables--.

Appropriate correction is required.

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The current abstract should be condensed into a single paragraph.

#### ***Drawings***

4. Figure 3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid

abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

5. Claims 1-3 are objected to because of the following informalities:

Line 1, "for inputting" should be changed to --configured to receive--.

Lines 2-3, "processing" and "outputting" should be changed to --process-- and --output-- respectively.

Line 2, "control" should be changed to --controlled--.

The use of "for clauses" in lines 1, 5 and 9 of claims 1-3; and third to last line of claim 2 should be replaced with language positively reciting the tasks preformed by the respective elements so that there is no question as to whether the language following the "for clause" is intended as limiting. --configured to-- is an example of such language. See MPEP 2106(II)(c).

Claims 1-2, line 9, the phrase "an arithmetic unit for adding a value" is not complete since the value is not being added to anything.

Claim 3, second to last line, "respectively" should be deleted.

Claim 3, last line, "adding all of them up" should be changed to --summing all of the resulting products--.

Appropriate corrections to the claims and corresponding corrections to the specification are required.

***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claim 5 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 5 requires "an order of N of the N-order filter is set to be an order or more which is necessary for converting the command to be L-rank differentiable." The specification does not describe how to determine an order of N which is necessary for converting the command to be L-rank differentiable. The specification does state at page 11, lines 13-15 that for 2-rank differentiability, N should be 2 or more. However the following paragraph then states that N=2 and L=4 is also plausible. These two paragraphs appear to be contradictory and provide no guidance on how to determine an order of N which is necessary for converting the command to be L-rank differentiable.
8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
10. Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). The term "1-rank differential" is not well known in the art and is indefinite because the specification does not define the term.

***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. **Claims 1-6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishida (JP 2000-029534) in view of Yamamoto et al (JP 10-14921).

Yamamoto et al teaches:

**Re claim 1.** An optimum command producing apparatus for inputting a command, processing the command in such a manner that a control object implements a desirable

operation and outputting an optimum command value to a servo control apparatus, comprising:

an arithmetic unit for adding a value obtained by multiplying an output of the N-order filter processing section by a gain (instruction generation part 1, Figure 1).

Yamamoto et al fails to specifically teach: **(re claim 1)** an N-order filter processing section for carrying out an N-order filter processing for the command and calculating values from a 1-rank differential to an (N-1)-rank differential of the command subjected to the filter processing; **(re claim 5)** wherein a recursive type filter or a non-recursive type filter is used for the N-order filter and an order N of the N-order filter is set to be an order or more which is necessary for converting the command to be L-rank differentiable.

Nishida teaches, at Figure 13, a rectifier 201' which calculates a moving average of an input signal and outputs rank differentials of this signal. Page 14 of the translation of Nishida teaches that N samples are taken for filtering the response and (N-1)-rank differentials,  $p$ , are calculated from this input. The moving average filtering cleans an input signal so that the signal used by the rest of the invention does not have the noise associated with the input signal.

In view of Nishida's teachings, it would have been obvious to one of ordinary skill in the art at the time of the invention to include, with the apparatus as taught by Yamamoto et al, **(re claim 1)** an N-order filter processing section for carrying out an N-order filter processing for the command and calculating values from a 1-rank

differential to an (N-1)-rank differential of the command subjected to the filter processing; (**re claim 5**) wherein a recursive type filter or a non-recursive type filter is used for the N-order filter and an order N of the N-order filter is set to be an order or more which is necessary for converting the command to be L-rank differentiable; since Nishida teaches a way to obtain the rank differentials used by Yamamoto et al with a cleaner signal.

Yamamoto et al further teaches:

**Re claim 2.** The limitations omitted from claim 2 are addressed at Re claim 1.

An M-order filter processing section for carrying out an M-order filter processing over respective variables output from the arithmetic unit again (filter 6, Figure 1).

**Re claim 3.** Claim 3 recites the same limitations as claim 1, except (N-1) is replaced with L, a broader, less limiting variable. Thus the rejection of claim 1 applies to claim 3 as well.

**Re claim 4.** Wherein a value of L of the L-rank differential is an order of a model for approximating the control object (Figure 1, the system is modeled using each of  $\theta$ - $\theta^{(5)}$ ).

**Re claim 6.** Wherein the optimum command value is one of a position command, a speed command, an acceleration command and a torque command or a combination thereof ( $\theta$ , Figure 1).

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SPENCER PATTON whose telephone number is (571)270-5771. The examiner can normally be reached on Monday-Thursday 7:30-5:00; Alternating Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Khoi Tran can be reached on (571)272-6919. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Examiner, Art Unit 3664  
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